

इंटरनेट

मानक

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“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

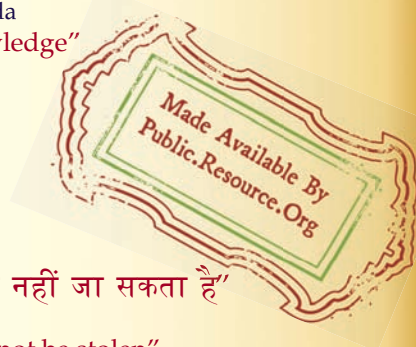
IS 9084 (1979): Recommendation for nominal capacities for fluid storage spherical tanks [MED 17: Chemical Engineering Plants and Related Equipment]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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**AMENDMENT NO. 1 OCTOBER 1983****TO****IS : 9084-1979 RECOMMENDATION FOR NOMINAL CAPACITIES
FOR FLUID STORAGE SPHERICAL TANKS****Alteration**

(Page 1, clause 3, tabular matter):

- a) col 2, heading — Substitute ' m ' for ' m³ '.
- b) col 3 and 4 — Substitute the following for the existing values:

<i>Actual Volume (Water Capacity) m³</i>	<i>Variation of Actual Volume with the Nominal Capacity, percent</i>
(3)	(4)
164·6	+ 2·79
203·7	+ 1·81
248·5	— 0·60
321·6	+ 2·10
381·7	— 4·58
477·9	— 4·42
632·5	+ 0·40
817·3	+ 2·16
904·8	+ 0·53
1 010·4	+ 1·04
1 231·8	— 1·54
1 352·3	+ 0·17
1 596·3	— 0·23
2 007·0	+ 0·35
2 572·4	+ 2·90
3 156·6	+ 0·53
4 003·1	+ 0·08
5 024·3	+ 0·49

(EDC 57)



Indian Standard

RECOMMENDATION FOR NOMINAL CAPACITIES FOR FLUID STORAGE SPHERICAL TANKS

1. Scope — Recommends the nominal capacities of fluid storage spherical tanks used for storing fluids in chemical, petrochemical, fertilizer and oil industries.

2. Terminology — For the purpose of this standard, the following definition shall apply.

2.1 Nominal Capacity — It is the capacity used in designating the fluid storage spherical tank. It is a rounded off value of the capacity of the container in cubic metres and does not include the volume of the nozzles but slightly varies with the actual volume of the sphere based on the internal diameter provided.

3. Recommended Nominal Capacities of Standard Spherical Tanks — As per the column 1 of the table given below:

Nominal Capacity m ³	Suggested Internal Diameter m	Actual Volume (Water Capacity) m ³	Variation of Actual Volume with the Nominal Capacity, Percent
(1)	(2)	(3)	(4)
160	6.80	164.6	+ 2.80
200	7.30	203.7	+ 1.00
250	7.80	248.5	- 0.00
315	8.50	321.0	+ 1.90
400	9.00	382.0	- 4.50
500	9.70	477.0	- 4.60
630	10.65	632.0	+ 0.04
800	11.60	817.0	+ 2.10
900	12.00	904.0	+ 0.04
1 000	12.45	1 010.0	+ 1.00
1 250	13.30	1 230.0	- 1.40
1 350	13.72	1 351.0	+ 0.01
1 600	14.50	1 564.0	- 0.23
2 000	15.65	2 007.0	+ 0.15
2 500	17.00	2 570.0	+ 2.80
3 150	18.20	3 156.0	+ 0.02
4 000	19.70	4 003.0	+ 0.08
5 000	21.25	5 024.0	+ 0.50

Adopted 26 February 1979

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EXPLANATORY NOTE

Hydrocarbons from crude oil to volatile fractions shall be stored during the intervals between production, transportation, refining, blending and sales. Storage cost is one of the most important factor in the price of finished petroleum products and it shall be minimised by making use of the most economic storage methods.

The real storage cost of volatile products largely depends upon the initial investment in storage facilities and loss of product by evaporation, the later being of particular importance. Evaporation may be fully controlled by means of a properly designed storage equipment. The sphere has got the chief advantage of giving the maximum storage volume for minimum surface area. For any given capacity the weight of a spherical vessel will be about 60 percent of that of cylindrical vessel operating at the same service conditions. Also it gives half the stress value in comparison to cylindrical shell and minimum leak insulation. The possibility to store large amounts of gases or liquids in a single pressurized storage container represents a further advantage of spherical tanks.

In spite of these established gains if a sphere size is not properly chosen, it drastically leads to high material and fabrication costs. If spheres are to be designed to different capacities, the numbers of sizes of spheres are likely to be considerable and hence the tooling cost would be enormous. With a view to minimise tooling cost, the nominal capacities are standardized in this standard.

The standard provides for the different sizes of storage spherical tanks with varying capacities. The nominal capacities are based on a series of preferred numbers [see IS : 1076-1976 Preferred numbers (*first revision*)]. In the present standard R10 series is being used. The minimum capacity of the storage spherical tank according to the present standard is 160 m³ and the maximum is 5 000 m³.

It is considered uneconomical to choose a spherical vessel below 150 m³ capacity. Above 5 000 m³ capacity it would be better to go in for a second spherical tank to increase the storing capacity rather than increasing the size of the sphere.

The indigenous manufacturers in the country have already manufactured several sizes of fluid storage spherical tanks, the nearest of such sizes have been considered for adoption in the standard nominal capacities. However, the actual volume may differ by ± 5 percent.